

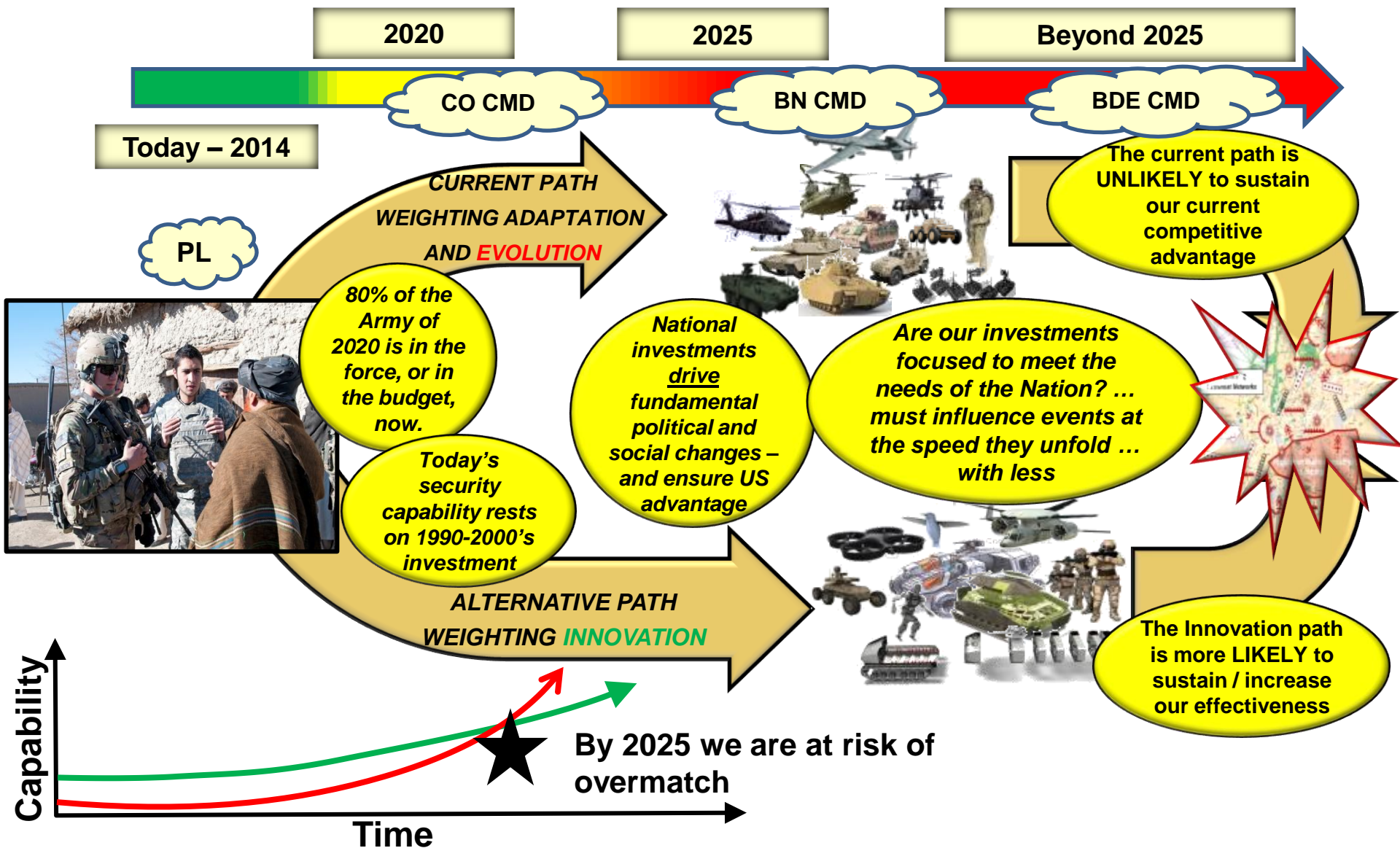


# ***S&T Focus: Force 2025 and Beyond***



**COL Christopher Cross**  
**Army Capabilities Integration Center**  
**U.S. Army Training and Doctrine Command**

# The Challenge ... Will Today's Investments Secure the Future?



*Mid-term must focus on providing leaner , more capable, expeditionary units to maintain overmatch  
The far-term will deliver technologies that fundamentally change the nature of the force and how we fight*



# Imperatives for Change: Emerging Threats and the Need to be Expeditionary

## Contemporary Adversary Behaviors:

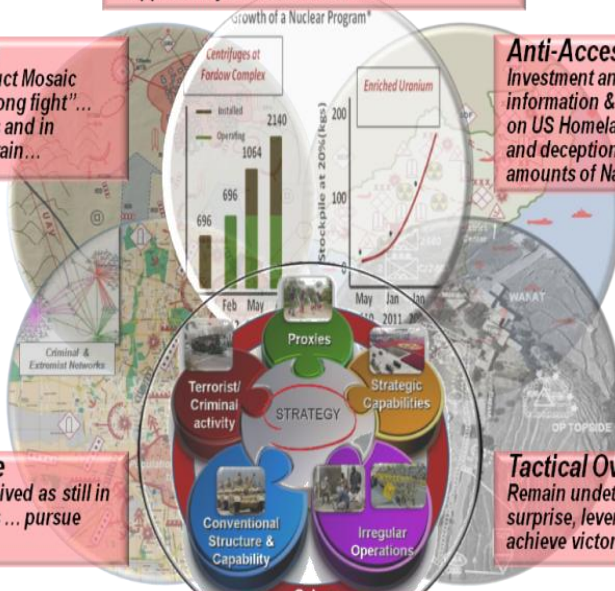
- Obtain weapons of mass destruction ...
- Exploit perceived US weakness ... attack US will
- Pursue strategies below US interest levels
- Execution is sequential and simultaneous as opportunity and conditions allow

## Passive Defense

Ground Forces Conduct Mosaic Defense, create the "long fight" ... postured along routes and in Complex & Urban Terrain...

## Preserve Regime

Decentralize, be perceived as still in charge, retain options ... pursue irregular actions



## Anti-Access & Area Denial

Investment and actions ongoing ... information & cyber warfare focused on US Homeland & Allies ... denial and deception consuming large amounts of National ISR

## Tactical Overmatch

Remain undetected, achieve surprise, leverage home advantage, achieve victory or other gains

## Exploit State, Non-state & Proxy actors

Leverage a complex mix of aligned and independent actors and capabilities ... often acting absent central direction and control ... against US/Allied interests & objectives

## We Need An Expeditionary, Scalable & Ready Modern Army (From CSA Priorities, SEP 13)

- Train and equip the Total Army to rapidly deploy, fight, sustain itself, and win against complex state and non-state threats in austere environments and rugged terrain (The expeditionary mindset).
- Support the Joint Force with critical enablers such as aviation, intelligence, engineers, logistics, medical, signal, and special operations, both while enroute to, and operating within expeditionary environments alongside Unified Action Partners.
- Rapidly deploy, fight, and win whenever and wherever our national interests are threatened.
- Focus S&T investment to maximize the potential of emerging game-changing landpower technologies to counter emerging threats.

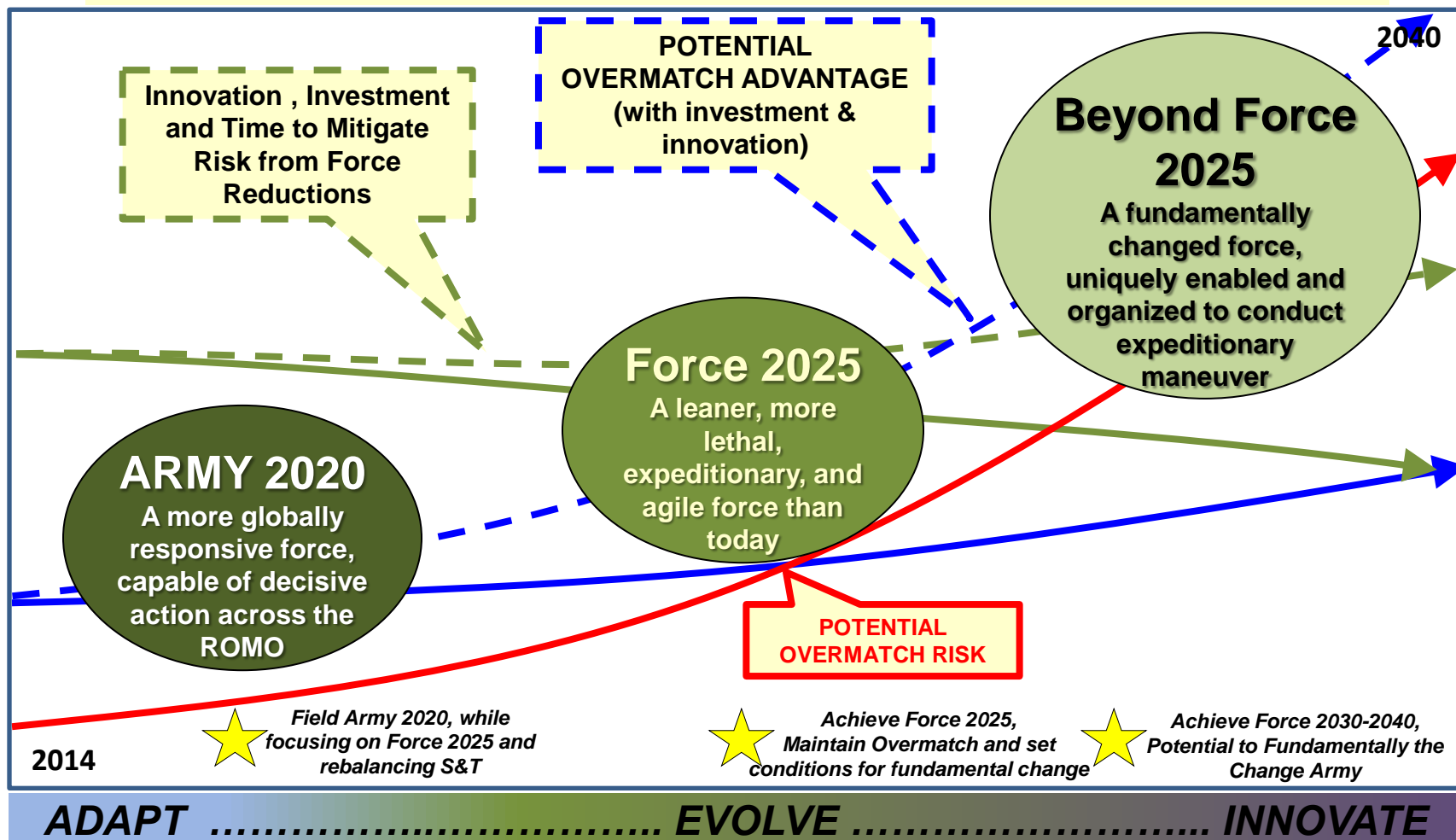
***"The Army will remain the most highly-trained and professional All-Volunteer land force in the world; uniquely organized with the capability and capacity to provide expeditionary, decisive landpower to the Joint Force" (From CSA Priorities, SEP 13)***

***We must rebalance now to prevent overmatch and to provide new capabilities for the future force***



# Ready for the Future: Considerations for 2025 & Beyond

- The Army is in transition and must balance investments in readiness with increased capabilities for 2025 & beyond



**To maintain our advantages and meet the demands of the emerging security environment, DoD and the Army must take the long view, establishing an enduring, joint effort thru the far term ... While remaining prepared for the near-certainty that an unanticipated crisis will arise that will require Army forces at an unforeseen time, manner and place**

# Where the Army Should Focus ... Next?



- Campaign "Seasons" - Fixed Fortifications
- Small Armies as Capital Investments
- Emergence of Levee en Masse

- Precision Weapons-GPS Navigation
- Network-Common Operating Picture
- Integration of Information and Joint Effects



- Industry of War
- Large Armies- Tactical and Operational Durability
- Emergence of Combined Arms Warfare



The next  
Global  
Technical Era?

Soldier Performance?

Beyond Digital?

Mobility, Lethality,  
Protection, Materials?



- Strategic through Tactical Nuclear Weapons
- Wars of Limited Objective
- Emergence of Revolutionary Warfare

**Absent breakthroughs .... The technologies and systems of Army of 2030 are in our S&T base today ... Leading to little change in the physical characteristics of that Army ... DOD must recognize landpower is the US asymmetric advantage and make it the number one Defense investment**



# Integrated S&T Lines of Effort

## Attributes of an Expeditionary Force

### S&T Lines of Effort

### LOE Outcomes

### End State

Mobile, Protected Platforms

Improved Lethality and Effects

Logistics Optimization

Aviation

Materials & Manufacturing

Power & Energy; Energetics

Fundamental Science

Cyber, EW, and Interoperability

Information to Decision

Human Performance Optimization

Robotics

*Deploy globally and rapidly; seize & maintain initiative*

*Increased lethality; directed energy weapons; mobile ground launch*

*Reduced reliance on ISBs and Sustainment Forces*

*Extended reach; increased lethality; heavy lift*

The rapid deployment of scalable, tailored, operationally and tactically significant forces on short notice to usually austere locations in order to conduct any type of operation immediately upon arrival, often in persistent anti-access / area denial environments.

*Relevant intelligence to points-of-need delivered at the speed of change*

*Maximized individual and team performance – Army professionals, holistic fitness*

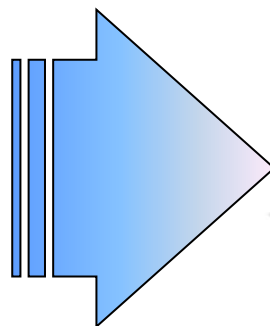
*Robotics enable and augment humans; mitigate risk*

# Mobile Protected Platforms

Heavy, expensive, large support reqs.



Strategically & Tactically Mobile



## Tomorrow

- Balance of Mobility, Firepower, and Protection
- Lighter, scalable protection that maximizes occupant survivability in every operating environment
- Lightweight, agile platforms that increase options for employment of Strategic Landpower
- Restored strategic responsiveness that deters conflict and enables other elements of national power
- 360 degree protection that identifies, prevents, and mitigates CBRN and explosive hazards at standoff range and maneuver speeds

## Force 2025

- Enhanced Mobility for Airborne Infantry (MAI)  
*Ground Mobility Vehicle Ranger (GMV-R)*  
*Phantom Badger*
- Mobile Protected Firepower (MPF)  
*LAV 25 Family of vehicles*  
*Up gunned Stryker*

## Beyond Force 2025

- Unmanned Air / Ground Vehicle Integration  
*Robotic Wingman*
- Army Ground Vehicle (AGV)  
*30-ton Tank*

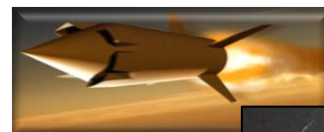
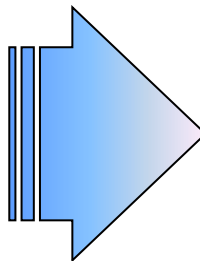
***Expeditionary, mobile, and agile units with the ability to arrive in theater first, with the most...***

# Lethality

*Lethal formations constrained by time, terrain, distance, and uncertainty .*



*Lethality, Mobility, and Survivability-balanced formations that overcome terrain, distance, and uncertainty.*



## Tomorrow

- Extended range precision surface-to-air and surface-to-surface fires that overcome anti-access and area denial threats and enable assured access to global commons
- Discriminant, scalable, tailorable effects that achieve combatant commanders' objectives while preventing fratricide and minimizing collateral damages
- Renewable directed energy resulting in "bottomless munitions stowage" and order of magnitude standoff increase

## Force 2025

- Dismounted Lethality
  - Counter Defilade Target Engagement (CDTE)*
  - Precision Sniper Rifle*
  - Individual Assault Munitions*
- Indirect Lethal Effects
  - 120mm High Explosive Guided Mortar*

## Beyond Force 2025

- Extended Range Precision Surface Fires
  - Land based Rail Gun*
  - High Energy Explosives and Advanced propellants*
- Increased Survivability of Key Assets
  - Mobile High Energy Lasers for Counter Rocket and Mortar*

***Expeditionary maneuver with decisive responsiveness to prevent overmatch***





## ***Looking Ahead***

- **Change must deliver expeditionary capability, result in order of magnitude improvement, and lessen the burden of Soldiers, leaders and units**
- **Continuous assessment of operating environment ... threats, challenges, and opportunities**
- **Conducting enterprise wide assessment of near term investment portfolios to ID lowest Risk/ROI for reallocation to far term basic and applied research**
- **ID most impactful areas of technology/science and prioritize and focus basic and applied research in those areas**
- **Develop plan to deliver 6.1 breakthroughs [how, not if] and mature technologies with “order of magnitude” impact to TRL 7 by 2025**
- **Exploit technologies to create order of magnitude improvements in human performance, information and decision making, and combat systems that significantly increase expeditionary capabilities and lift the burden from Soldiers, leaders and units**

**Maintain technological edge .... Counter challenges to US competitive advantages ... focus investment and create options for future leaders**